What Is Claimed Is

1. A method for protecting a subject against an agent that elicits production of a toxic species when said subject is exposed to said agent, wherein said toxic species is selected from the group consisting of a free radical, a superoxide anion, and a heavy metal cation, said method comprising the step of administering to said subject *in vivo* a pharmaceutical composition comprising:

(A) a polynucleotide that encodes a protein that is transiently expressed in said subject, wherein said protein is capable of neutralizing or eliminating said toxic species; and

(B) a pharmaceutically acceptable vehicle for said polynucleotide.

2. The method of claim 1, wherein said agent is ionizing radiation.

3. The method of claim 2, wherein said ionizing radiation is clinical radiation therapy.

4. The method of claim 1, wherein said agent is a chemotherapeutic drug.

5. The method of claim 1, wherein said administering is achieved through inhalation.

6. The method of claim 1, wherein said administering is parenteral.

7. The method of claim 1, wherein said administering is intrarectal.

8. The method of claim 1, wherein said administering is intravesicle.

9. The method of claim 1, wherein said polynucleotide is a cDNA and said vehicle is a liposome.

10. The method of claim 1, wherein said polynucleotide is a cDNA and said vehicle is an adenovirus vector.

11. The method of claim 1, wherein said polynucleotide is a cDNA and said vehicle is a ligand-DNA conjugate.

12. The method of claim 1, wherein said protein is selected from the group consisting of gamma glutamyl transpeptidase, manganese superoxide dismutase, and metallothionein.

13. The method of claim 1, wherein said protein is gamma glutamyl transpeptidase.

14. The method of claim 1, wherein said protein is manganese superoxide dismutase.

15. The method of claim 1, wherein said protein is metallothionein.

16. The method of claim 1, wherein said pharmaceutical composition comprises a mixture of polynucleotides selected from the group consisting of a polynucleotide encoding gamma glutamyl transpeptidase, a polynucleotide encoding manganese superoxide dismutase and a polynucleotide encoding metallothionein.

17. The method of claim 1, wherein said polynucleotide is under control of an inducible transcriptional regulatory sequence.

18. The method of claim 1, wherein said polynucleotide is under control of a radioinducible transcriptional regulatory sequence.

19. The method of claim 1, wherein said subject is a cancer patient.

20. The method of claim 19, wherein said cancer patient is a lung cancer patient.

21. The method of claim 19, wherein said cancer patient is a prostate cancer patient.

22. The method of claim 19, wherein said cancer patient is a cervical cancer patient.

23. The method of claim 19, wherein said cancer patient is an endometrial cancer patient.

24. The method of claim 19, wherein said cancer patient is an ovarian cancer patient.

25. The method of claim 19, wherein said cancer patient is a bladder cancer patient.

26. The method of claim 1, wherein said administering is performed prior to said subject's exposure to said agent.

27. A pharmaceutical composition comprising:
(A) a polynucleotide that encodes a protein that is transiently expressed in a subject exposed to an agent that elicits production of a toxic species selected from the group consisting of a free radical, a superoxide anion, and a heavy metal cation, wherein said protein is capable of neutralizing or eliminating said toxic species; and
(B) a pharmaceutically acceptable vehicle for said polynucleotide.

28. The composition of claim 27, wherein the polynucleotide is selected from the group consisting of a polynucleotide encoding gamma glutamyl transpeptidase, a

polynucleotide encoding manganese superoxide dismutase and a polynucleotide encoding metallothionein.

29. The composition of claim 27, wherein the pharmaceutically aceptable vehicle is selected from the group consisting of a liposome, an adenovirus vector and a ligand-DNA conjugate.

30. The method of claim 1, wherein the polynucleotide is stably integrated into the genome in said subject.

31. The method of claim 1, wherein the polynucelotide is not integrated into the genome in said subject.

add B2>